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ERIC--DEVELOPMENT THROUGH JUNE, 1968.

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THIS REPORT ON ERIC FOR THE FIRST SIX MONTHS OF 1968 DESCRIBES (1) STATUS OF TRENDS FROM 1967 AND EARLIER, (2) MAJOR CHANGES IN ERIC COMPONENTS, (3) GROWTH OF ERIC, (4) INCREASED USE AND IMPACT OF ERIC, AND (5) COMING DEVELOPMENTS. IT IS CONCLUDED THAT THE VALUES OF THE DECENTRALIZED PLAN OF OPERATION ARE DEMONSTRATED IN THE GROWING TIES AMONG CLEARINGHOUSE AND OTHER EDUCATIONAL ORGANIZATIONS AND BY THE INCREASING NUMBER OF INFORMATION ANALYSIS PRODUCTS GENERATED BY THE CLEARINGHOUSES. THE HISTORY OF ERIC FALLS IN THREE STAGES, WITH THE FIRST STAGE INVOLVING ESTABLISHMENT AND ORGANIZATION OF THE INTERNAL ERIC SYSTEM. DURING THE PAST YEAR THESE ACTIVITIES HAVE BECOME ROUTINIZED AND THE CLEARINGHOUSES HAVE BEGUN TO INCREASE INFORMATION ANALYSIS AND RELATED DISSEMINATION PROGRAMS. THIS STAGE IS ALSO WELL ESTABLISHED AND THE ERIC SYSTEM IS NOW REACHING ITS MATURE LEVEL OF OPERATION, WITH MORE ATTENTION BEING DEVOTED TO LINKING ERIC TO OTHER DISSEMINATION CHANNELS AND TO ENCOURAGING LOCAL, STATE, COLLEGE AND UNIVERSITY ORGANIZATIONS TO USE ERIC PRODUCTS AND SERVICES. APPENDIXES INCLUDE AN OUTLINE OF ERIC DEVELOPMENT FROM 1965 THROUGH 1967 AND A LIST OF SPECIAL ERIC COLLECTIONS AND RESOURCES. A RELATED DOCUMENT IS ED 020 499, AND EVALUATION OF ERIC THROUGH JUNE, 1968. (JB)

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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ERIC: DEVELOPMENT THROUGH JUNE, 1968

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The Educational Resources Information Center (ERIC) was begun by the Office of Education in the spring of 1965. Its development from that date through the end of 1967 is outlined in Appendix A. Following is an updating of ERIC's development through June, 1968, with a little spill over of the ERIC record into August, 1968.

This report on ERIC for the first six months of 1968 is organized under main headings: (1) status of trends from 1967 and earlier; (2) major changes in ERIC components; (3) growth of ERIC; (4) increased use and impact of ERIC; and (5) coming developments.

Status and trends from 1967 and earlier

Major trends in the earlier development of ERIC that continued into 1968 include:

1. Further development of tighter interfaces among the system components--Central ERIC, the Clearinghouses, the ERIC Facility (North American Rockwell contractor), and the ERIC Document Reproduction Service (EDRS) operated by the National Cash Register Company. ERIC remains the only national information system based on a decentralized plan of operation that involves the diverse capabilities and not always identical interests of universities, professional organizations, profit-making organizations, and a Federal Government agency. By mid-1968, the accomplishments of the 22 organizations that make ERIC run have demonstrated, without doubt, the values of the decentralized system. Moreover, the system not only works--reports are acquired, processed, and disseminated, and added dissemination channels have been established--but these activities are being accomplished with increased effectiveness and efficiency. Also, an indicator of the maturity of the system is that all systems continued on schedule even though six new clearinghouses were added to the system in 1967 and four previously existing clearinghouses acquired new directors. Recognition of the increased performance of the ERIC system also came in the form of a group award presented to the ERIC staff for "imaginative leadership and outstanding performance in building an educational information system based on a novel combination of Federal, university, professional organization, and industrial resources" (May 23, 1968).

2. An exponential rise in the production of information analysis products by the clearinghouses--newsletters, bibliographies, research reviews, and interpretative summaries. In the 1967 program review, slowness in developing information analysis programs was cited as a problem, but, with few exceptions it no longer is a problem. As operational details of document processing have become routinized, clearinghouse directors have been able to devote more time to information analysis and clearinghouse dissemination programs. As a result, by the end of June, 1968, 14 newsletters were being produced regularly, an estimated 165 shelf bibliographies were available either in individual form or as reported through newsletters, and 55 research reviews or summaries of information on critical information topics had been produced and disseminated. Not only is there now a wide variety of materials on many specialized subjects, but feedback indicates that the materials generally are of high quality and are being widely used as well.

The shift from a program primarily concerned with documentation to one that is increasingly centered on information analysis and dissemination represents a continuation of earlier trends and marks an important turning point in the development of the ERIC program.

3. Closer coordination and mutual development of dissemination services with professional organizations and key educational groups. If production of Research in Education and indexes to special collections is viewed as the visible portion of the ERIC-iceberg, then the many formally established and even more numerous informal relationships and activities involving clearinghouse staff and colleagues in specialized fields of education represent the massive, generally less visible, but highly potent portion of the system. Proof of the value of ERIC, as seen by dissemination gate-keepers of professional organizations, the editors of journals and publication committees of professional organizations, is the number of regular columns featuring material prepared by clearinghouses now appearing in professional journals. Regular ERIC columns now appear in 21 journals and reach a potential of nearly 400,000 educators monthly or quarterly. Several professional organizations also have become publishers of the research reviews and interpretative summaries produced by clearinghouses. Also, virtually every clearinghouse has organized or participated in dissemination sessions at one or more national organizations in the past year. In addition, staff of Central ERIC have made presentations on ERIC at major meetings of national organizations, including the American Library Association, Special Libraries Association, American Society of Information Sciences, American Educational Research Association, National Microfilm Association, and the American Educational Publishers Institute, the American Management Association, and the first Aristotle Conference held by the National Security Industrial Association.

4. Increased reliance upon ERIC by State and local educational organizations, colleges and universities, Regional Educational Laboratories, and other organizations for a speedy supply of screened materials and

indexes for their use. Data presented later showing use and impact of ERIC also illustrates the further emergence of a crude sort of national educational information network in education, with ERIC being its hub or, to choose a more apt metaphore, its central nervous system. Consultation by clearinghouse directors and Central ERIC staff with key State and local officials has contributed to movement by local and State agencies toward development of local information service centers. An added thrust in developing State information service capabilities is the new direction being given to the EDSEP effort (ERIC Document Center of State Education Publications). A contract was awarded in June, 1968 to Oregon State System of Higher Education for stimulating input of significant documents from States to ERIC, but more importantly, for assisting States to develop and help local education agencies to develop information service centers by their clientele. This program is being directed by Dr. Allen Lee.

5. Further development of centralized acquisition of Federal and State documents. A noteworthy boost in the ERIC acquisition program came when the Commissioner of Education issued a memorandum on May 2, 1968 instructing all OE units to forward all documents worthy of national distribution to ERIC for dissemination. Further efforts are underway to ensure that all Federal documents related to education are acquired by Central ERIC. The EDSEP project will assist with efficient acquisition of all significant State-produced documents. Also, an agreement along the lines established with NEA has been reached between ERIC and the Bureau of Curriculum Development of New York City. Under the terms of this agreement, curriculum materials produced by New York City will be fed into the ERIC system. An exchange agreement also has been worked out with Document Abstracts, produced by the American Society of Information Sciences and the Clearinghouse on Library and Information Science, to provide for more efficient joint coverage of library and information science documents. The acquisitions program described above will result in a broadened base for ERIC and assure continued input of high quality documents.

6. Continued work toward developing a reporting system for assuring sounder management decisions by clearinghouse directors and OE staff. Information supplied on the quarterly reports has improved steadily in quality, quantity, and promptness. Further modifications in the quarterly report form and new information required for presentation at the fall program review sessions will add to the management data needed to improve the functioning of ERIC.

7. Continued movement toward new levels of operation, particularly the coverage of journal literature by ERIC and development of on-line capabilities. Both of these developments are described in more detail in the last section of this report.

In summary at this point, the ERIC system is firmly rooted, lines of communication for acquiring documents for widespread dissemination through printed and oral channels have been established with major segments of American education, particularly through professional organizations, a wide assortment of quality newsletters, bibliographies, research reviews, and interpretative summaries are being produced by the clearinghouses, and the ERIC program has turned the corner from being a document processing system to becoming a balanced and versatile information system capable of providing for documentation of research reports and journal literature, but also of producing a variety of products and services suited to the needs of educators and researchers in many specialized fields or disciplines.

Major changes in ERIC components

Three major changes occurred in the system in 1968. First, and most traumatic, was the change in EDRS contractors. The National Cash Register Company became the new contractor in December, 1967 but because of the fall freeze of funds, unavoidable delays in shifting the master negatives from Bell and Howell to NCR, a sharp upturn in orders during the ensuing down time required by the change over, a large backlog of orders built up, happily now this problem is behind us. Second, a new clearinghouse was added in June. The Clearinghouse on Teacher Education, operated by the American Association of Colleges for Teacher Education in conjunction with the National Commission on Teacher Education and Professional Standards and the Association for Student Teaching, a department of NEA, and directed by Dr. Joel Burdin of AACTE assumed responsibility for the topical area previously covered by the clearinghouse at City University of New York. Third, beginning with the January, 1968 issue, RIE appeared in a new format that not only increased its attractiveness and readability, but also resulted in the increased page compaction.

Growth of ERIC

Detailed information on the growth, use, and impact of ERIC are provided in a separate report, "ERIC Evaluation, June, 1968." The following includes only highlights from that report.

Acquisition of Documents. About 13,000 documents were acquired by Central ERIC and the clearinghouses from all sources from January through June, 1968. This number does not include documents acquired by clearinghouses but immediately discarded because of their obvious poor quality or inappropriateness for education. It does, however, include all documents acquired by Central ERIC and those selected by clearinghouses for processing through RIE or for retention in local clearinghouse files. On the basis of the first six months acquisition, over 26,000 documents will be processed by clearinghouses in 1968; less than half of which are

expected to be included in Research in Education.

Sources of documents acquired by Central ERIC have shifted during the first six months of 1968 in comparison with the last six of 1967. The percentage of documents received from the Bureau of Research fell from 48% to 19%; in contrast, percentages from the Bureau of Elementary and Secondary Education, USOE, increased from 1% to 27%, and those from other parts of OE from 3% to 15%, from the Department of Defense from 1% to 10% and from NEA and State educational agencies, each from zero to 8% and 6%, respectively. These changes illustrate further the broadened base of documents entering the system, and, at the same time, serve as a reminder that high selection standards must be maintained to ensure that only timely and significant documents are selected for inclusion in RIE.

Expansion of RIE. Reflecting the growing acquisition program of Central ERIC in the clearinghouses, RIE has steadily expanded from 67 reports in January, 1967 to 422 in January, 1968, and on to 795 in June, 1968.

Special collections produced by ERIC. Two special collections were produced in the six months of 1968: 1/

1. Pacesetters in Innovation, Fiscal Year 1967. This index provides abstracts and indexes for 907 projects to advance creativity in education (PACE) approved for support by the U.S. Office of Education in Fiscal Year 1967. The microfiche collection costs $120. The resume and index volume (OE-20103-67) is available from GPO for $2.50.

2. Manpower Research, Inventory for Fiscal Years 1966 and 1967 includes information on 393 reports from projects funded by OEO, and the Departments of Labor, HUD and DHEW. The microfiche collection costs $60 and the resume and index volume is expected to be available from GPO (0E-12031) in October, 1968.

The two collections added 1,300 new documents to the system.

Growth in total ERIC document collection. The ERIC collection began with the 1,746 documents included in the Disadvantaged Collection released in the summer and fall, 1965. Since then, through the publication of special collections and growing monthly increments provided by RIE, the total collection grew to 7,227 documents in January, 1968 and reached 12,324 documents by the end of June, 1968.

Information Tools produced by Central ERIC. The Thesaurus of ERIC Descriptors (First Edition), December, 1967 contains about 3,100 descriptors and has been updated by the release of Supplement No. 1 to

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1/ These are in addition to the previously produced collections which are identified in the separate listing shown as Appendix B.

to the First Edition in March, 1968. The Supplement adds approximately 400 new descriptors, includes a rotated, display of all ERIC descriptors, and is available as OE-12031-1 from GPO for $2.00.

The first semi-annual 1968 index to Research in Education has been prepared and sent to the Government Printing Office.

An attractive brochure, ERIC Can Help, was first made available in May. Approximately 20,000 copies have been distributed and an order for another 20,000 has been placed with the Government Printing Office.

Finally, a self-instructional manual written for use by educational practitioners and decision makers, entitled "How to Use ERIC" is now available. Copies of this document will be made available to each clearinghouse and to requestors upon demand.

First drafts of three additional resource tools, designed mainly for use in information service centers, have been received from contractors:

- A Guide to Information Tools, Methods, and Resources in Science and Engineering, prepared by Saul Herner, Herner and Company.
- Handbook of Information Sources in Education and the Behavioral Sciences, prepared by Jesse L. Gates and James W. Altman, American Institute for Research.
- Reference Manual for Educational Information Service Centers, prepared by Systems Development Corporation.

All three are being field tested in the institutes being held in August for training staff of local information centers. After any changes suggested by their use in the institute, they will be published and made available widely.

Increased use and impact of ERIC 2/

Research in Education. RIE has enjoyed a consistent growth in number of paid subscribers: up from 209 since January, 1967 to 3,396 in January, 1968 and on to 4,558 in May, 1968. In addition, approximately 1,100 copies are distributed free to educational organizations, government agencies, and other users.

A study of the April 1968 list of RIE subscribers showed that the largest category of subscribers was institutions of higher education (1,314), but States and local agencies were not far behind with 1,053 subscribers. Other large subscriber categories were individuals (479), commercial organizations (428), foreign subscribers (211), and professional organizations(104).

2/ Detailed information on use of ERIC by educators, researchers, and educational organizations and impacts of ERIC upon educational practices are described in the separate paper: "Evaluation of ERIC, June, 1968," ED 020-449.

Largest percentage increases in numbers of subscribers between August, 1967 and April, 1968 occurred among foreign purchasers (up 73%), local school districts (up 35%) and individuals (up 20%). The overall increase was 24%.

Data are not available on the number of uses made of the copies of RIE in circulation: however, a study by Herner provides some information on the comparative use of RIE and other secondary education announcement bulletins.[3/] Among respondents who directed research programs for Title III (ESEA) projects at the local or State educational level, RIE was reported used more frequently (by 62% of such respondents) than Educational Index (used by 59%). Researchers at institutions of higher education reported approximately equal use of three secondary journals: RIE and Education Index were used by 58% of the respondents and Dissertation Abstracts by 59%. Even though it is a newcomer to education, being less than two years old at the time of the survey, RIE's use compares very well with use of long established, well-known abstracting-index journals by researchers and educators working on projects supported by the Office of Education.

EDRS. Distribution of nearly 1.5 million microfiche from EDRS in the first six months of 1968 exceeded the 1.2 million distributed during the entire previous year. Hard copy sales for the January-June, 1968 period (7,674) titles) were in excess of the total of 6,000 sold during all of 1967. Standing orders for receiving all documents cited in RIE accounted for most of the microfiche distribution. In June, 1968 there were 122 standing orders as compared with 65 in January, 1968 and 40 in June, 1967. Most standing orders have been placed by institutions of higher education (74%). Local and State agencies accounted for 20% of all such orders. Other orders were scattered among commercial and non-profit organizations. In addition, Office of Education maintains 60 full sets of ERIC microfiche at regional offices, regional laboratories, clearinghouses, in the Office of Education itself and at the HEW Library and the Library of Congress.

Sales of individual documents reflect the use made of RIE and indexes for special ERIC collections. From January to June, 1968, 35,560 microfiche and 8,004 hard copy reports were sold on a demand basis. Microfiche outsold hard copy by a ratio of approximately 4 to 1. Again institutions of higher education accounted for the largest proportion of microfiche and hard copy sales, but were almost matched in numbers of purchases by State and local education agencies. Specifically, institutions of higher education purchased approximately 16,089 microfiche and 2,851 hard copy titles, or 45% of all microfiche and 36% of all hard copy, whereas combined microfiche purchases by State and local agencies total 14,146 or 39.7% of all microfiche sales and 2,572 hard copy titles or 32% of all such sales.

3/ See: Saul Herner, Janet D. Griffith, and Mary Herner, Study of Periodicals and Serials in Education. Final Report Project Number BR-7-0993, U.S. Office of Education. Available from EDRS as ED-017747.

As shown earlier for the sales of RIE and now repeated in purchases of individual microfiche and hard copy, State and local education agencies closely rival institutions of higher education in use of ERIC products. In general, RIE and documents cited in it are equally attractive to university-based educators and those employed at State and local educational institutions.

Clearinghouse dissemination products. By June, 1968 twelve clearinghouses were producing newsletters that were distributed to nearly 54,000 key local, State and Federal, and professional organization staff in specific areas served by the clearinghouses. The newsletters appear as frequently as the IRCD Bulletin, bi-monthly whereas others are published 8, 10 or 3 or 4 times per year, and several appear periodically.

A much larger potential population of educators, close to 400,000, is reached by the regular columns featuring appropriate material from RIE, special ERIC collections, and clearinghouse files that are appearing in professional journals under arrangements with clearinghouses. Ten clearinghouses are responsible for preparing such columns in 21 journals or newsletters published by professional organizations. This type of journal dissemination provides high benefits at low cost. By becoming a channel for dissemination of current significant information, the journal is enhanced, and an existing communication channel is strengthened. The professional organization also benefits from its enhanced role in dissemination in its field. The ERIC program benefits as well by having a direct and inexpensive channel for reaching a large number of specialized educational professionals. Most importantly, though, specialists in education benefit by having new and important information about recent research developments or information about new programs brought directly to them at no additional cost, bother or time investment on their part. By using journals as an already existing and functioning communication device, clearinghouses can build a very inexpensive sdi (selective dissemination of information) program.

In addition, material from RIE is being used by editors of several major journals for special columns which they edit and place in their journals. The back cover of American Education features an ERIC document each month. The NEA Journal has run special columns featuring ERIC material and has been cited by Senator Yarborough of Texas as an outstanding example of dissemination of educational research information. The American Vocational Journal includes a 16-page special feature called "Research Visibility" which synthesizes and interprets research and development information on critical topics in vocational education. Each issue draws almost exclusively upon ERIC material. The combined circulation of these three journals is approximately 1.1 million. Finally, some of the research coordinating units funded under the Vocational Research Program and operating as part of State departments of education

publish newsletters that relay ERIC materials to local teachers and supervisors. Feedback, an 8-page newsletter published by the New Jersey RCU, is an example of further dissemination of ERIC materials by a State educational agency.

Increased emphasis on information analysis programs by clearinghouses has shown up in their accelerated production of bibliographies and research reviews. A year ago, clearinghouses had produced only a hand full of reviews and not many more bibliographies. By June, 1968 the picture had changed dramatically, as shown in the statistics given earlier for production of newsletters, bibliographies, and research reviews.

Query answering by clearinghouses. During the period January-June, 1968 clearinghouses responded to over 11,300 letters or phone calls and requests from visitors for information. Practitioners (teachers, counselors, librarians, etc.) contributed the largest number of requests (41% of the total) superintendents, principals, or their representatives (the decision-making groups) were next (22 %); then came researchers with 9% of the total requests; staff of professional organizations made 7% of the requests; and others which included parents, students, staff of Federal agencies, supplied 21% of the requests. Obviously, the practitioners and decision-makers want and are seeking assistance from clearinghouses. Unfortunately, limited budgets preclude expanding direct information providing services. Hopefully, development of local information service centers will ultimately provide the needed services at the local level.

On-site use of clearinghouses services. One of the original aspirations for the clearinghouses was that because of their unique document collections and the outstanding professional status of the directors and the skills of the staff in retrieving desired information, the clearinghouses would become the "alma mater" of invisible colleges of specialists who share a common field. The development of on-site use of clearinghouses by United States and foreign educators for library and reference work suggest that many of the clearinghouses are becoming internationally recognized as unique intellectual centers.

Representatives of ministries of education or foreign universities from many countries have visited ERIC clearinghouses in recent months. A quick tally of recent visitors includes a number from Canada, others from Russia, Australia, New Zealand, England, France, the Netherlands, Germany, Rumania, Finland, Nigeria, Japan, and Hong Kong.

On numerous occasions researchers or educators from the United States have come to clearinghouses to do their library and reference work. The longest on-site residency of a specialist at a clearinghouse is three-quarters of an academic year, although about a half dozen persons

have spent one or two quarters of their sabbatical year working at a clearinghouse. Illustrative of other kinds of intensive on-site uses of clearinghouse facilities and collections are:

• A team of the American Institutes of Research spent two weeks at the Media and Technology Clearinghouse to compile a bibliography on literature on media instruction for the disadvantaged.

• A researcher spent one week at the Clearinghouse on Disadvantaged to compile information for a report to Superintendent Donovan of New York City on experimental programs to improve educational achievement of inner-city children.

• A representative of a tenants association spent the better part of five days at a clearinghouse looking for information on the development of residential schools.

• The State Department of California used the services of the Clearinghouse on Rural Education and Small Schools for a week to develop a bibliography on migrant education which they said would otherwise have taken "a month or a year or more" to develop if they had not had the services of the clearinghouse.

• A research team spent two weeks at a clearinghouse in developing evaluation criteria for review of educational programs for disadvantaged and migrant children.

• A university professor spent one week at the Clearinghouse for Educational Administration to develop a bibliography on school boards.

• Researchers from the Ford Foundation Task Force used the Clearinghouse on Reading for its indepth search of the literature on that subject.

Direct services to OE-supported programs by clearinghouses. In many ways, most unrecorded because of the frequent informal discussions between professional staff of clearinghouses and their colleagues serving Title I or III (ESEA) programs, State agency staff, directors of NDEA institutes or university-based researchers, clearinghouses are providing important services to projects supported by OE. Some specific and concrete ways in which clearinghouses have contributed to the accomplishments of goals of OE-supported projects include:

• Distribution of clearinghouse newsletters, bibliographies, and research reviews to key staff as illustrated by the mailing of the IRCD Bulletin from the Clearinghouse on Disadvantaged to all State Title I State directors.

• Distribution of packets of information, specialized bibliographies and review papers to directors of NDEA institutes in fields such as English, media, guidance and counseling and reading.

• Distribution of material on vocational education training to directors of the State Vocational Research Coordinating Units and to directors of various vocational educational training programs.

• Distribution of material to directors of training programs for teachers of adult basic education.

• Preparation of bibliographies and review papers in support of the conference on Mexican-American education held by the Office of Education and completion of arrangements with the Southwest Educational Development Laboratory to print 500 copies of these to satisfy requests for additional copies.

Assistance to other dissemination programs. Some of the newsletters, bibliographies, research reviews produced by clearinghouses are printed and distributed through professional organizations. Other ways in which clearinghouses are contributing to strengthening and improving existing dissemination channels or helping organizations develop more effective and new ones include:

• Providing bibliographic support to authors of chapters of the Review of Educational Research, the basic research review periodical in the field of education.

• Providing assistance to authors of the AERA Research Yearbook on Guidance and Personnel Services.

• Working with national organizations to help them organize dissemination programs so that the significant papers presented at national conferences are not lost, but are preserved as part of the archival literature in specialized fields in education. Clearinghouses have assisted national organizations in compiling indexes and organizing conference proceedings and in preparing synthesis volumes in which the many papers and information is reduced to more usable form by practitioners and decision-makers.

• Contributing to development of national comprehensive bibliographic activities by stimulating national organizations to work together to unify previously fragmented and sometimes duplicating effort. For instance, three clearinghouses, Modern Languages, Linguistics, and English are working together with four professional organizations, The Modern Language Association, the Linguistic Society of America, The American Council of Teaching of Foreign Languages, and the National Council of Teachers of English to prepare a comprehensive annual bibliographic system that will cover all phases of modern language activity in education.

• Developing a data bank of validated instructional programs. This is being pursued jointly between the Clearinghouse on Media and Technology and the National Society of Programmed Instruction.

• Conducting workshops and training sessions at national conferences on using information effectively, locating information sources, and specifically on using ERIC and describing services provided by clearinghouses.

• Providing consultation to local and State educational agencies and professional organizations that are interested in developing local information service centers. Classification schemes, document processing arrangements, reference techniques, and other operations of information storage and retrieval and dissemination are described and organizations are helped to select processes and arrangements best suited to their needs and budgets. For instance, the State of California is using the ERIC resume form for dissemination of curriculum materials produced by California school districts. The School Research Information Service developed by Phi Delta Kappa, has based its entire system upon the concepts of the ERIC program and uses the ERIC resume form. A number of Title III (ESEA) Centers have drawn upon the expertise of clearinghouses in developing their programs. Several are using clearinghouse procedures for developing their own report processing and dissemination programs. Clearinghouse staff often have to help local and State representatives to plan from expensive and often unnecessary computer systems which have been urged by consultant firms and to adopt more suitable alternatives.

In addition, one very unusual use has been made of the ERIC materials. An American scholar was asked to lead seminars in Rumania and Poland on teaching of English. The sponsor, the Department of State, provided several hundred dollars to purchase books for use during the seminars. Instead, the scholar purchased 400 microfiche documents from EDRS and with the money that was left over bought a portable microfiche reader. Thus, seminar members will be able to use a library of several hundred titles instead of 20 or 30 as would have been the case if money had been spent for books instead of microfiche.

Coming developments

The following list includes both definite plans for further operational changes or developments in ERIC during FY 1969 and some directions for more general development of the system. Although the line between Central ERIC and clearinghouse activities cannot be neatly drawn, the points listed under Central ERIC refer mainly to hard or firm plans for system development and expansion, whereas those listed under clearinghouses, for the most part, refer to suggestions for program development for clearinghouses as seen from the perspective of the Office of Education.

Central ERIC. Staff in Central ERIC are working toward the following lines for development of ERIC for the period July, 1968 through June, 1969:

1. Further consolidation of NAR activities for ERIC in Washington. Although computer activities provided by NAR will remain in California, other activities provided by NAR will be moved to the Washington area. New activities to be assumed by the Washington NAR group include assisting

with the routing of periodical material to clearinghouses, conversion of hard copy resume forms to machine readable form and closer working with the ERIC staff in accelerating the processing and editing of RIE and other indexes produced by the system. With these expanded activities, the NAR support has been entitled the ERIC Facility.

2. Publication of the Journal Index to Education (JIE) will become a reality, hopefully, in April or May, 1969. Plans are set to begin coverage of approximately 250 educational journals or other journals relevant to education and about 20 yearbooks, beginning with the January, 1969 issue. JIE will close a major gap in coverage of literature in education and will provide users with a comprehensive single source to an estimated 15,000 articles per year.

3. In August the Clearinghouse on Higher Education, located at George Washington University, and headed by Dr. Harold F. Bright became the 19th ERIC clearinghouse.

4. Research in Education is expected to undergo further change in format in the present fiscal year. The Government Printing Office still hopes to convert from the present linofilm, which began with the January, 1968 issue, to linotron. Linotron production of RIE will result in further improvement in readability of the text and still greater page compaction. However, even if the linotron conversion is delayed further, programming will be completed to permit use of upper and lower case in printing RIE by linofilm. This change is planned for the January, 1969 issue.

5. Emphasis will be placed by Central ERIC on ensuring timely announcement in RIE of significant reports related to education by the clearinghouses, but without much expansion of the size of Research in Education. The flow of documents into the system is increasing. The two new clearinghouses, Teacher Education and Higher Education will further add to the flow of documents into RIE, yet, continued expansion of RIE is not realistic: increased size reduces its value to individual users and unlimited expansion may lower the quality, and value of the reports cited. Furthermore, because of the Bureau of Budget size limitation, only about 1,000 reports per month can be included, given the present length of abstracts. The main burden of resolving issues related to criteria for document selection necessarily lies with the clearinghouses. This point is explored further in the next section, but for now it is sufficient to note that Central ERIC will be monitoring input to ensure timeliness of citations and will obtain ratings of the general quality of documents cited. Shorter abstracts also are desirable, and in no cases will abstracts exceeding 200 words be acceptable. Shorter abstracts will allow printing of a larger number of resumes and will help reduce backlogs of unprocessed documents. Together clearinghouses and Central ERIC will need to give careful attention to assuring that only the most significant, well done, and recent reports, with minimal abstracts are made available as quickly as possible, and within the limits of approximately 1,000 reports per month.

6. With the total document collection of over 12,000, in July, 1968. it is time to consider alternative ways of searching the ERIC files. Two approaches are being explored: (1) making full and updated tapes available on a regular basis for use by organizations on their own computer systems; and (2) providing for on-line interrogation of the ERIC files. "Marketable" tapes are expected to be available after January, 1969 and will be handled on a cost-to-user basis; on-line interrogation capacity will take longer. More information will be supplied when plans are firm for making ERIC tapes available. The first step in developing an on-line search capability for ERIC files is to develop the detailed specifications needed before a request for proposal can be issued for the actual development work. The pilot test should begin around October 1. It will be followed by a thorough development study, after which, hopefully, announcements can be made about ways in which users can interrogate the ERIC files on a remote basis. Remote interrogation capabilities are not expected until late 1970 or 1971. With the on-line capability ERIC can become part of any national networks that may exist at that time. Meanwhile full tapes will be available to any organization that wants to and is willing to pay for them.

7. Efforts are also going forward toward developing closer coordination of Federal information programs. Bureau of Research staff are working with staff in other parts of the Office of Education, HEW and other Federal agencies to establish efficient acquisition and document processing arrangements. ERIC and other information systems will benefit from such coordination. As any major developments occur, clearinghouse directors will be informed.

8. Increased emphasis will be given to development of interfaces between ERIC and information services at local and State educational levels and with college and university libraries as well. OE staff will devote considerable attention during the coming year to stimulating interest among local and State education agencies in developing local information services--the one-stop information service center idea. Further efforts will be made to develop at least a readiness among educational organizations to develop linkages for efficient use of material now made available by ERIC and to prepare for using ERIC tapes, to build timesharing computer arrangements, develop inter-library loan arrangements, and to share reference and other information-dissemination roles--in short, to work toward a national information education system. Regional and possibly national conferences are planned to help promote information systems thinking and capabilities among educational organizations and to acquaint them with ERIC and other information systems that they can draw upon now. The EDSEP project in Oregon is expected to contribute to development of information services at the State level. Also, as noted below, clearinghouses are and are encouraged to continue to contribute to development of local and State service capabilities.

9. Finally, evaluation of the ERIC program and its contributions to education, its weaknesses as well as its strengths, and most importantly, benefits obtained in relation to their costs, will continue as an important activity. Data drawn from the clearinghouse quarterly reports, from EDRS and GPO sales records, and from special analyses that may be supplied from contractors will be analyzed to determine the efficiency of program operations and the effects the programs have upon improvements in educational programs.

Clearinghouse developments. The following represents some of the ideas of Central ERIC staff for development of clearinghouse activities in the coming year:

1. Clearinghouses will be expected to reallocate some of their resources for processing of periodical citations referred to them. Further information will be obtained from the Herner study of educational periodicals to indicate the load each clearinghouse may be expected to carry. In most cases, it was not possible to make budget adjustments to cover the increased loads that will come with processing of periodical literature. However, as it becomes possible, adjustments will be made so that clearinghouses can perform this function as well as expanded information analysis functions.

2. Because of the limitations that have to be imposed on RIE, clearinghouse directors are expected to give careful attention to prompt processing of the most significant documents acquired. Large backlogs and long delays in processing weaken the value of the materials cited. Poor quality documents will serve to discredit the entire system. Points are not assigned to clearinghouses in relation to the number of documents processed: rather, awards go for prompt processing of documents whose quality and significance can be attested by the application of clear criteria and by concensus of qualified users. Brevity in abstracts also is desired.

3. Clearinghouses also will be called upon to sharpen reporting data and to provide additional management information so that more precision in cost-effective comparisons can be made. Data required for the fall, 1968, program review sessions is a step in obtaining more precise data. Continuation budget submissions will be expected in a similar format as well as in conventional line categories. With firmer management data, some of the complex issues regarding degree of emphasis on documentation, information analysis activities, dissemination activities, or service functions can be better assessed.

4. Information analysis activities continue as the major new direction seen for program development at the clearinghouse level. Obviously, limitations in budgets will require corresponding limitations in the expansion of these activities. However, to the extent possible,

clearinghouses are urged to prepare timely bibliographies and reviews on critical topics in education and seek arrangements for their effective distribution. Use of professional organizations and established communication channels is especially attractive; not only are the materials disseminated at low cost or possibly at no cost to clearinghouses, but also an assurred channel for reaching educators is exploited and the channel itself is strengthened and improved.

It should be obvious that the thinking of Central ERIC is that simple expansion of documentation activities is not the most effective route in developing a national information system for education. Equally important are data reduction, condensation, summarization and interpretation of large numbers of reports into a well-written, new document that will communicate to educators. Therefore, clearinghouses are urged to reflect upon relative expenditures now going into documentation activities as opposed to information analysis activities and to suggest possible changes in their budgets to allow for expansion in production in new information products.

5. Clearinghouses are urged as well to continue to develop dissemination channels to educators through professional organizations and other established communication channels. Clearinghouses also are urged to assist professional organizations and other educational groups to develop information using capabilities. The high payoff of these activities has already been demonstrated. For small investment of staff time, material prepared by clearinghouses can be feed into existing channels at virtually no additional cost and reach thousands of educators. Also, through workshops and other training activities at professional organizations, clearinghouses can provide leadership in professional organizations in helping members appreciate the values of information services and to stimulate them to urge development of local information services in their organizations.

Conclusion

The wisdom of building an educational information system upon a decentralized basis comes clearer with each day of ERIC's operation. Even with only a two-year history to draw upon, the importance of the autonomy of clearinghouses, rooted as they are in the web of professional relationships which characterize American education, is demonstrated in the growing ties among clearinghouses and other organizations in education and by the increasing flow of information analysis products generated by the clearinghouses.

If one is prone to dividing things into three parts, the history of ERIC could be viewed as following three stages: the first stage in ERIC's development consisted of establishing the internal ERIC system: organization of clearinghouses, development of acquisition patterns, processing of

documents, and establishing the ERIC Facility and EDRS. During the past year, when these activities had been routinized fairly well, the clearinghouses began to approach the second stage in their evolution: information analysis and related dissemination programs became much more visible. Now, with this stage also well established, the ERIC system is reaching toward its third and ultimately mature level of operation. While continuing the impetus of information analysis programs, central ERIC and clearinghouse staff can devote more attention to linking ERIC to other dissemination channels and to encouraging local, State, college and university organizations to use ERIC products and services. With further coordination and joint planning at local, State and Federal levels, we can confidently look forward in the near future when any person anywhere in the country can have fast, direct access to much of the nation's significant output of new information about educational research and development. Afterall, that is what everyone associated with ERIC has been working toward since the beginning of the system.

APPENDIX A

ERIC: Development through 1967*

The final months of 1967 mark the end of the first phase of the ERIC program. All components of the ERIC system have been operating for about 18 months. The trial period is over; the euphoria of being among the pioneers in information-system building in education is past; and now there is reality--how well is ERIC serving the educational community? How do accomplishments square with the goals set for ERIC at its inception 18 months ago? Eighteen months is a relatively short time span for assessing impacts of a new institution or, in ERIC's case, a new system. Still, some stock-taking is not only possible, but essential as ERIC moves from its developmental phase to a more or less routinized operation.

The following discussion is the first attempt by the program managers of ERIC to record the development, accomplishments, and problems of ERIC and to list possible next steps in ERIC's development. The discussion covers the period from the beginning of ERIC through December, 1967. The record will be updated through June 30, 1968 and on an annual basis thereafter. Four sections follow: history of ERIC; accomplishments; problems and issues; and next steps.

History of ERIC

Development of the concept of ERIC

ERIC's birth may be reckoned from June, 1966 when the final elements of the system as it is known today were set in place. But ERIC has a longer history as well. In fact, its gestation period exceeds its 18-month infancy. ERIC's longer history goes back to 1959 where Dr. Tauber and Oliver Lilley of the Graduate Library School, Columbia University, received a grant to conduct a feasibility study for developing an information service to support the new Media Research Program authorized under Title VII of the National Defense Education Act. Their recommendations were broadened by a Task Group of program officers in the Office of Education headed by Dr. Hjelm and Mr. Clemens. In 1960 the Task Group recommended that the Office of Education award funds for the pilot operation of an information service that later could be assumed as an in-house operation by the Office of Education. A grant for the design and pilot operation of an information center was awarded to Western Reserve University in 1961. Requests for staff in USOE for the proposed Educational Research Information Center (ERIC, as it became known), however, were unsuccessful. Therefore, the activity at Western Reserve University was expanded and work continued toward development of a thesaurus.

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*Based on remarks by Dr. Lee G. Burchinal, Director, Division of Information Technology & Dissemination, presented at the October, 1967 meeting of the Directors of ERIC Clearinghouses, in Washington, D.C. ERIC stands for the Educational Resources Information Center, a national dissemination program supported by the U.S. Office of Education through the Bureau of Research.

After being talked about for three years, ERIC first became an organizational entity in USOE as the result of the reorganization that created the Bureau of Educational Resources and Development (BERD) in 1964. Mr. Flynt, the Associate Commissioner for BERD, selected Dr. Haswell as officer in charge of ERIC and assigned four other staff to the program. Under Dr. Haswell, and with the able consultation of Dr. Fred Goodman of the University of Michigan, the ERIC staff formulated a decentralized plan for ERIC based on the operation of clearinghouses, each of which would focus on a given subject or topic. Funds for implementing the program, however, were lacking until the passage of the Elementary and Secondary Education Act (ESEA) of 1965.

ERIC Begins with Support of Education for the Disadvantaged

With ESEA the Office of Education assumed responsibility for many new programs; specific dissemination authority was added to the Cooperative Research Act--the basic legislative authority for USOE's research activities; increased funding was granted for research and research-related activities; and authority was granted for hiring new staff. Dr. Ianni, Director of the Division of Research, and Dr. Burchinal, the Deputy Director, used the opportunities provided by ESEA to implement plans for ERIC. The first step was to add professional information scientists to the ERIC staff. Mr. Kennedy and Mr. Eller became the first to join the ERIC staff. Second, the ERIC staff developed a special effort to provide the support for Title I of the Elementary and Secondary Education Act--assistance for the education to the disadvantaged. A contract was awarded to the Jonkers Corporation to assist the ERIC staff in disseminating what has become known as the "Disadvantaged Collection." By the time this initial effort was completed, the 1740 document collection was distributed to all State educational agencies and about 600 local school districts.[1/] Third, Informatics received a contract to explore further ways in which the proposed clearinghouses could function in the American multi-level and hetergenous educational system. The report from this study reinforced the basic concepts of the decentralized plan and provided useful suggestions for implementing the plan.[2/]

The Spring of 1965 was important for ERIC in still another way. The top-to-bottom reorganization of the Office of Education in June, 1965 created a new Bureau of Research, and within it a Division of Research Training and Dissemination (DRTD) with Dr. Burchinal as the Division Director. ERIC became a branch within DRTD and received Dr. Burchinal's strong support. Additional staff were acquired and funds were authorized for implementing the system.

1/ For further details see: Lee G. Burchinal and Harold Haswell, "How to Put Two and a Half Tons of Research into One Handy Little Box," American Education, 2 (February, 1966), 23-25.

2/ The report is available as ED 010128 from the ERIC Document Reproduction Service: Jules Mersel, et. al., "Information Transfer in Educational Research," Informatics, Sherman Oaks, California, April, 1966. Pp. 193. Mf $1.50. HC $7.72.

Implementation of ERIC as a System

ERIC, though, is best conceived as a system, and not in terms of administrative developments within the Office of Education. The short history of ERIC, therefore, can be dated from the establishment of final elements of the system. All system components were established in quick succession. The initial contract for the ERIC Document Reproduction Service was awarded to the Bell & Howell Company in November, 1965. The first twelve clearinghouses were established from February through June, 1966.[3/] Finally, the contract for computer services with North American Aviation was signed in May, 1966. Thus, June, 1966 is probably the single best date for identifying the operational implementation of the ERIC program.

In 1966 the Panel on Educational Terminology (PET) was organized to provide assistance in developing the ERIC Thesaurus. Under the Chairmanship of Mr. Eller, PET met regularly on a quarterly basis through 1966 and 1967. Some of the meetings were working sessions of the seven-man group only; other sessions were held as open meetings in various parts of the country to obtain comments and suggestions from educators.

The Central ERIC staff worked with the clearinghouse directors and their staffs in establishing the operational procedures needed to ensure a smooth flow of documents and information about the documents--cataloging information, abstracts, and descriptors--through the system. Quarterly meetings have been held with clearinghouse directors since the summer of 1966. Several week-long training sessions have been conducted for key technical staff of the clearinghouses. And numerous site visits were conducted. Communication lines were established. System requirements were developed, refined, and established as standard operating procedures.

Meanwhile, planning for the monthly bulletin for announcing documents added to the ERIC document collection became reality with the first issue of Research in Education published in November, 1966. The first issue of Research in Education followed the award of the contract to North American Aviation by only five months. The rapid development of the system requirements for publishing this monthly abstract and index bulletin is a tribute to the hard work and high capability of the ERIC staff and the North American Aviation staff assigned to the ERIC program.

By June, 1967, six additional clearinghouses were added to the system, making the total 18. Under Government procurement regulations, new bids were requested in September, 1967 for operating the ERIC Document Reproduction Service. The successful bidder was the National Cash Register Company. This company became the EDRS operator in December, 1967.

3/ The ERIC clearinghouses as of December, 1967 are listed in Appendix A. The first 12 clearinghouses are identified with an asterisk.

Even at this early date during the initial operational phases of the ERIC program, to what extent is the ERIC system providing needed services to education? A review of some of the notable accomplishments of the ERIC system may partly answer this question.

Accomplishments

Among the most notable accomplishments of the ERIC system are the following:

1. First of all and most remarkable, with only a small number of professional staff at Central ERIC and the clearinghouses, the ERIC system has been built and, although lurching a bit this way or that at times, it works. Extensive document acquisition programs have been established by Central ERIC and by the clearinghouses. Documents are being collected, screened, processed, and announced regularly through Research in Education and other special indexes. Copies of these documents are available through the ERIC Document Reproduction Service. Clearinghouses are producing bibliographies and interpretative reviews of research in critical topics.

2. Tighter interfaces are developing among system components and operational efficiency is increasing. ERIC is the first national system based on decentralized effort involving the diverse capabilities and interests of universities, professional organizations, profit-making organizations, and a Federal government agency. The evidence is unmistakable: this combination is a winning team. Initially, Central ERIC was responsible for the design and operation of the system. Now, clearinghouse directors are actively involved in all major policy decisions. The Directors Policy Group, a committee of five ERIC clearinghouse directors, meet with the Director, Division of Information Technology & Dissemination and the Chief of ERIC to identify and clarify problems and policy issues to present to all clearinghouse directors at their quarterly meetings. System tools and program and management aids are under development. The first edition of the thesaurus, under Mr. Eller's direction, is now complete and awaiting printing at the Government Printing Office. Terminology work continues a pace at the clearinghouses, at North American Rockwell, and Central ERIC. Technical expertise is increasing at the clearinghouses. Input to North American Rockwell has become routinized. Management and organization at the clearinghouses has become stronger and efficiency of operations is increasing.

3. ERIC's accomplishments are remarkable, especially when measured against its 18-month history. Among the indicators of ERIC's growth and accomplishments are:

- Establishment of 18 clearinghouses and their operation as part of a functioning system--all within 18 months.

· Development of an extensive report acquisition network: about 5,000 documents were acquired by Central ERIC and another 5,000 by the clearinghouses in 1967.

· Publication, distribution, and continued improvement and expansion of Research in Education: reports cited increased from 44 in the initial November, 1966 issue to 414 in the December, 1967 issue, and the number of subscribers increased to almost 3,700 in the same time period.

· Sales at the ERIC Document Reproduction Service continue to increase: in 1967 almost 1.2 million microfiche were distributed. About half of this number was sold to the public (exclusive of USOE purchases, the other half was distributed by USOE to clearinghouses, Regional Offices, Regional Educational Laboratories, and to several other sites). Standing orders for all documents increased to 68; and microfiche outsold hardcopy reproductions by a ratio of 12 to 1.

· Four special collections of documents, each with its own abstract and index bulletin(s) have been developed and made available to the educational community:

a. Office of Education Reports, 1956-1965, available from the Government Printing Office. This publication comes in two volumes. One volume contains resumes for 1214 research reports received by the Bureau of Research, USOE over the ten-year period from 1956 to 1965. The other volume contains author, institution and subject-matter indexes. The "Resume" volume (OE-12029) costs $1.75. The "Index" volume (OE-12028) costs $2.00. Research in Education begins with reports received in the Bureau of Research in 1966. Together the Office of Education Reports, 1956-1965 and Research in Education provide a complete record of all research reports received in the U.S. Office of Education. The total microfiche collection of the 1214 reports costs $280.

b. Pacesetters in Education, Fiscal Year 1966, available from GPO. The volume (OE-20103) includes resumes and author, institution, and subject-matter indexes for the 1075 projects funded under Title III, ESEA, in Fiscal Year, 1966: $2.50. The entire collection of project work plans on microfiche costs $100.

c. Catalog of Selected Documents on the Disadvantaged, available from GPO, A Number and Author Index (OE-37001); cost, 65 cents; Subject Index; (OE-37002); cost, $3.00. These two index volumes were based on the original ERIC collection of 1746 documents related to the education of the disadvantaged. The entire collection of reports on microfiche costs $230.

d. Number and Subject Index of Selected Documents on Higher Education prepared by the ERIC Clearinghouse on Educational Administration, University of Oregon, 81 pp. This volume contains a subject and report number index for the 845 reports selected from those included or cited in The Reporter, a magazine formerly published by the U.S. Office of Education. This index is available through the ERIC Document Reproduction Service as ED 012110; 50 cents on microfiche, $3.24 on hardcopy. See Research in Education, 12 (December, 1967), p. 49 for the resume for ED 012110. The entire collection of reports on microfiche costs $115.

• Two other special collections are under development:

a. Pacesetters in Education: Fiscal Year 1967: expected in May, 1968. The format of this volume will be like its 1966 predecessor, but will contain information for the 904 projects funded in fiscal year 1967 under Title III, ESEA. The volume will contain about 250 pages and is expected to cost $2.50. The entire collection of project work plans will be available on microfiche although the price is not yet available.

b. U.S. Government Manpower Research Reports, Fiscal Years 1966 and 1967: suggestive title only; expected in June, 1968. This volume will contain the usual ERIC-type resumes and author, institution, and subject-matter indexes for approximately 350 research reports pertaining to manpower received by programs in the Department of Health, Education, and Welfare, Department of Labor, and Office of Economic Opportunity from July, 1966 through June, 1967. All documents in this collection also will be available at a later date.

• Preparation of the world's first educational thesaurus: Thesaurus of ERIC Descriptors (First Edition), December, 1967 (OE-12031). U.S. Government Printing Office, Washington, D.C. 20402. $2.50. Contains about 3,000 descriptors.

• Preparation of Annual Index 1967 Research in Education. Two volumes: Report Resume Index ($3.25) and Project Resume Index ($1.50). Order by name only from GPO.

• Development and constant revision of management tools including the quarterly management reports and monthly acquisition reports from clearinghouses.

• Development of a rich variety of information products and services by clearinghouses, including newsletters, bibliographies, reviews of research, and arranging for secondary dissemination of information through professional journals or at conferences. By the end of 1967, over 200 bibliographies and reviews of research were produced by the clearinghouses.

• Provision of direct information services to State and local information centers and to educators: in 1967, responses by all clearinghouses and Central ERIC to letters, calls, or visits averaged about 2,000 per month.

• Consultation services and leadership to State and local educational agencies and to colleges and universities for developing local information services and for drawing effectively upon ERIC services and products.

• Integration of ERIC with the programs of the USOE Regional Offices. Directors of Research in each region were trained in uses of ERIC and are interpreting and promoting the ERIC program in each region.

• Development of a remote query system for interrogating ERIC files.

4. ERIC is emerging into the main stream of educational development, partly because of the leadership provided by Central ERIC, and mainly because of the involvement of clearinghouses with professional organizations and other groups in their subject areas. The value of the decentralized basis for the ERIC system has been validated by experience to date. By permitting professional persons to participate in information processing as well as continuing their previous professional roles, the ERIC system has benefited from having high level talent available to develop new information services uniquely suited from the various audiences in the educational community. Each of the ERIC clearinghouses has begun an information analysis program: some products are already available. These include newsletters, bibliographies, reviews, and interpretive studies. In addition, there are regular columns in at least eight journals devoted exclusively to secondary dissemination of ERIC materials. Other articles on ERIC and descriptions of its services have appeared in many professional magazines.

Moreover, because of ERIC the educational community has begun to devolop a greater appreciation for information services and increased sophistication regarding them. For example, the summer 1967 supplemental issue of the Educational Researcher, published by the American Education Research Association, was devoted exclusively to dissemination and featured the ERIC system. Universities and professional organizations are keenly interested in participating in the ERIC system.

Sales data are an indication of the importance of ERIC in the educational community. Research in Education is sent free to approximately 1,100 organizations or agencies. In addition, in January, 1968, there were nearly 3,700 subscribers: 36 percent of whom were universities or colleges; 31 percent were school districts; and the remainder were business organizations, foreign subscribers, nonprofit groups, professional associations, or individuals. Microfiche sales approximated 550,000 copies.

Increased use of ERIC's services and products also has brought increased laudatory comments, suggestions for improvement, and criticisms. Both positive and negative comments are welcomed and evaluated as bases for further improvements in the ERIC program. Both types of comments are indications of the importance of ERIC to educators and other users.

5. ERIC is becoming an important base, perhaps the center, of an emerging national education network. State and local educational organizations are beginning to develop information service centers. These centers can develop because ERIC provides them with a continuous flow of accessible and usable reports. With ERIC supplying their input, these centers can develop individualized reference services and can repackage information to meet the inique needs of their clientele. The shift of Title III (ESEA) funds to State administration will, no doubt, accelerate the trend toward development of State and local information service centers. Central ERIC staff is closely following development of these "local one-stop" information service centers to ensure their maximum interface with ERIC.

6. ERIC has emerged in the big league of Federal government information systems. First of all, ERIC is a basic program element in the Bureau of Research program. It is the official depository for all substantive reports generated from activities supported by the Office of Education. In addition, the staff of Central ERIC have established cooperative agreements with other Federal agencies and other groups such as the National Education Association and the American Education Publishers Institute to acquire reports from these sources that are relevant to education. The intra-and interagency document acquisition program has had three effects: (1) the immediate purpose of acquiring documents relevant to education is being achieved; (2) word about ERIC is getting around, both within and outside government; and (3) as a result of increased awareness of ERIC, this system has received increased recognition in the Government information science community.

Central ERIC staff members serve on various panels of the President's Committee on Science and Technology (COSATI). Dr. Burchinal chairs one panel. Partly because of ERIC, the Office of Education is represented in discussions on science information policy at the Office of Science and Technology. ERIC is now mentioned along with the scientific or bio-medical systems in various Government planning documents. In fact, ERIC is the only major functioning system outside the areas of science, technology or bio-medicine. It has no peers in the humanistic or behavioral science disciplines.

As a reflection of its broadened role, the name of ERIC was changed in July, 1967, from the Educational Research Information Center to the Educational Resources Information Center. ERIC remains a document-based system, but the collection is no longer restricted to research reports. Also the name change was made to alter the image that ERIC's products and services are valuable only to researchers. The collection already, in fact, contains much of value to administrators, curriculum development persons and practitioners, and sales to date plainly show that local school personnel are using ERIC reports. The name change makes ERIC correspond in fact with what it actually has become.

7. ERIC also began to receive recognition within the professional science information community. Within the circles of the American Society for Information Science (formerly the American Documentation Institute),

COSATI (the President's Committee on Scientific and Technical Information), and the Federation for International Documentation, ERIC is known and is acquiring increased respect. ERIC is now cited in major review of information systems and noteworthy developments in information science and its operations. In one recent review ERIC was described in the following way: "One of the few information networks actually operating in the field of social sciences--and perhaps the only significant one--is the Educational Research Information Center (ERIC)."4/

Knowledge of ERIC remains spotty in the information science community. After all ERIC is a new program and the materials processed--educational R&D documents--are far afield from sciences, technology, and bio-medicine. Yet, because of the novel decentralized basis of operation, unique combination of acquistion, documentation, information analysis and specialized dissemination functions of clearinghouses, and growing size of the system, ERIC will, no doubt, become an interesting focus of study by information scientists. Further, the activities of the ERIC Clearinghouse on Library and Information Sciences and dissemination through ERIC of reports generated as a result of the Library and Information Science Training and Research Programs administered by the U.S. Office of Education should increase use of ERIC by librarians and information scientists.

Accomplishments of the ERIC system are real and have occurred because of the hard work, imagination, and dedication of the clearinghouse directors, their staffs, staff of Central ERIC, and staff associated with the two ERIC contractors. Serious problems remain. Some, such as printing, budget, and related Government regulations, are given, and there is no point in generating unproductive anxiety over them. Others, such as critical shortages of trained staff, while extremely serious, have to be attacked through inservice training programs. Still other issues, particularly those related to operational problems within the ERIC system and functional relations between ERIC and educational information service centers, are within our capacity to reduce considerably, if not solve.

Problems

Among the most serious issues requiring continuing attention are the following:

1. Coming to terms with reality of a decentralized system. Persons who have examined ERIC carefully have recognized the overwhelming benefits

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4/ Donald P. Hammer, in Carlos A. Cuardo (Ed.), Annual Review of Information Science and Technology, New York: Wiley, 1967 p. 404.

of the decentralized system. High quality professional staff are able to devote part of their time to documentation activities without becoming stale in their fields of specialization. As leading professional persons in their specialized fields, Directors of Clearinghouses can stimulate arrangements for secondary dissemination of materials through journals and other media of the professional organizations. Various interfaces between ERIC and the professional areas of education represented by clearinghouses are developed, not through official relationships involving the Office of Education, but on the basis of professional interests and needs by clearinghouse directors and executive officers of professional associations, editors of journals, chairmen of national conferences, and so on. The decentralized clearinghouse concept allows the ERIC system to build upon established communication patterns in education and permits quick, flexible action in building dissemination programs. Nothing is perfect, however. The decentralized route also has raised some difficult problems.

A persistent problem arising from the decentralized organization of ERIC is the question of overlap (multiple overlap--any combination of 18 practically) in acquiring and processing documents. There can be no clear, precise, or fixed definitions of scope among clearinghouses. Knowledge simply doesn't break that way. Hence, a certain tolerance for ambiguity must exist among all ERIC clearinghouse directors. This problem must be worked at all the time, and some management techniques have helped to reduce its seriousness. Central ERIC will continue to pursue central acquisition of all documents produced by or through NEA, Federal, or State education agency programs--or generated by large producers of documents. Copies flow into Central ERIC and are assigned to only one clearinghouse for review and processing. Duplication is thus avoided. The monthly acquisition report for all clearinghouses has cut down duplication of reports acquired individually by clearinghouses.

The decentralized system also requires regular collection and careful analysis of management data from all clearinghouses. The quarterly report form, now several times revised, provides data for assessing efficiency of operations, demonstrating the high cost-benefit returns from ERIC that are already evident, revising program objectives, and planning new directions for ERIC program development.

Decentralization also has complicated what is always a difficult issue--quality control. Maintaining high and relatively even quality among abstracts, indexing, and information analysis products is difficult when the products are generated at 18 separate sites, each with its own management, different subject emphasis, and different audiences. There is no precedence in other information systems for approaching these problems: staff associated with ERIC will have to work out procedures themselves. Quality control is an important responsibility of each clearinghouse director: standards must be set and maintained for quality

of all clearinghouse products. In addition, Central ERIC staff review products for quality insofar as judgments can be made without going into issues of subject-matter competency. Further efforts to maintain quality may include evaluation studies of both Central ERIC products--thesaurus and Research in Education, for example--as well as clearinghouse products--such as bibliographies, reviews, and newsletters.

2. Developing an information analysis program. In the first year of operation (mid-1966 to the latter part of 1967) most clearinghouses necessarily were absorbed in developing acquisition programs, establishing document processing procedures, developing technical competency in abstracting, indexing, and inputting resumes. This phase is now past, and the experience gained by the earlier clearinghouses has shortened this period and made it less traumatic for the second set of clearinghouses. Still, even at the outset of the ERIC program, emphasis was placed on development of research review or "state-of-the-art" papers, newsletters, bibliographies, and efforts to promote secondary dissemination of clearinghouse materials, including abstracts from Research in Education. Some clearinghouses have developed comprehensive information analysis programs; most, however, have been slow in this area. Information received during the Fall review sessions indicates that clearinghouse directors also recognize the lack of information analysis activities and are increasing these activities. Greater emphasis on production of information products is one of the top priorities in future steps for ERIC.

3. Becoming an indispensable resource for professional developments in American education. One of the chief reasons for selecting the decentralized basis for ERIC was to permit clearinghouses to develop intimate ties to the professional communities they serve and to build upon established human communication patterns--scholar to scholar--and institutionalized patterns such as represented by journals, conferences, or annual meetings. Clearinghouse directors have made significant progress in developing needed information services in cooperation with professional organizations, but, like expansion of information analysis programs, greater effort needs to be put into exploring ways in which the ERIC clearinghouses can contribute effectively to the mainstreams of educational growth in the United States.

Involvement with the professional communities served by a clearinghouse can take many forms. Among these are briefing or reporting sessions with key groups such as the boards of professional organizations or their research advisory committees; preparation of articles describing or promoting ERIC for publication in journals of national organizations, arranging for programs on ERIC and information transfer at annual conferences, developing training sessions on information use at meetings or at clearinghouses, or arranging for publication of special columns containing information about ERIC and selected abstracts, reviews, or bibliographies as a regular section of journals. As of the end of 1967

some clearinghouses had pursued development of most of these and related approaches to professional community involvement: most clearinghouses had pursued only a few of them. Again, indications were evident at the Fall review sessions that all clearinghouse directors saw movement of their clearinghouse into a central service position in their community of interest as their major challenge.

4. Developing a sound basis for assessing benefits derived from the ERIC system in relation to costs. Cost-benefit analysis and all that it encompasses is accepted as the frame of reference for assessing the ERIC program and for projecting the budget necessary for development of ERIC services. Similarly clearinghouse directors are required to establish goals for their activities, assess alternative approaches to achieving these goals in light of their dissemination payoff, and to compare the efficiency and benefits of each of the major sets of clearinghouse activities.

Central ERIC uses data from the quarterly reports, annual intensive reviews, and periodic site visits to assess the functioning of all ERIC contractors, clearinghouses and the ERIC facility (NAR) and the EDRS (NCR) contractors. In a short run framework, data are analyzed for selecting methods of operation that will optimize operational efficiency. In a long run framework, analyses are geared to revision of programs and program elements to ensure highest possible cost-benefit returns for the total OE, State, and local investment in dissemination and utilization activities. In either case, clearinghouse directors and Central ERIC staff are working together to improve procedures that will permit development of operational cost data for each major clearinghouse activity. As procedures are refined, it will be possible to examine costs in relation to returns and to allocate resources so as to maximize benefits. Already, the decision has been made to reduce providing individual reference services to that which can be handled by form letters. An inordinate amount of staff time and budget had been going into providing individually prepared answers to letters and phone calls. Other services such as preparation of reviews or bibliographies that could be used by thousands was lagging. Consequently, clearinghouse directors were advised to concentrate on developing generalized services and to limit severely resources devoted to reference and other individualized services. Central ERIC will continue to examine efficiency of operations and apply cost-benefit analyses to all ERIC activities.

Additional everyday problems are as common for ERIC as for any other information system, but now we turn to major directions for future development of ERIC.

Future directions for development

1. Increased emphasis on information analysis. Acquisition and processing of documents for inclusion in Research in Education will

continue to absorb the greatest amount of resources allocated to ERIC, but each clearinghouse is expected as well to develop an information analysis program appropriate to its subject area. As the document processing operations become routine, they should also become less expensive--assuming a relative constant acquisition level--and savings in funds can be diverted to preparation of research reviews, critical bibliographies, and other information packages. Development of an information analysis program also presents an opportunity to involve significant groups from the educational community in clearinghouse activities and to help integrate clearinghouse activities with developing thrusts in the professional communities being served. Evaluations of clearinghouse activities will include assessment of the number, variety, and quality of information products.

2. Further integration of ERIC with national programs supported by the Office of Education and other Federal agencies. There will be no major shift in operations of clearinghouses, although clearinghouses will be called upon occasionally to produce information packets for use in other programs. For instance, the Early Childhood Clearinghouse produced special material for use in Follow Through programs; the Vocational Education Clearinghouse is preparing a special collection of documents on manpower research and the Rural Education and Small Schools Clearinghouse is providing backup services for a National Conference on the Education of Mexican-Americans. Other requests will be made when important services are needed and when clearinghouses are believed to be the best source of the needed information.

3. Development of a multi-level national information network with ERIC as its linking subsystem. ERIC clearinghouses and Central ERIC cannot begin to provide the services needed by State and local educators, college and university staff members, professional organizations, and other groups working toward improvement of education. The job is too big, and clearinghouses are not the appropriate sites for developing user services. Services are best located and developed within the working environment of the users--within the local or State agency, in the Department or School of Education of a college or university, or as part of the library. Therefore, the Division of Information Technology & Dissemination, Bureau of Research, USOE, has been providing impetus for development of local information service centers that can provide the link between the needs of educators and the information resources available through ERIC and other information systems. Contracts have been let to prepare reference and resource materials for use by local and State educational agencies in developing and operating local centers. Plans are being developed to conduct institutes for training staff of local and State information service centers.

In a few years the multi-level national educational information network might resemble the following: (1) local information service centers in metropolitan areas to provide reference, browsing, and immediate access to all ERIC materials and other information resources and services;

(2) other local service centers organized on a district or regional basis within a State; (3) in more sparsely populated States, State-level information service centers; (4) information services of Regional Laboratories; (5) consultant and liaison services provided through Regional offices; and (6) all backed up by the products and services of the ERIC system. In effect, ERIC would become the producer and wholesaler, with the local and State centers becoming retailers of information. Development of such a network will require leadership and to help develop and promote training programs. Clearinghouse directors specifically can contribute to the development of the emerging network by forming linkages with professional associations, promoting the importance of information services at local and State levels, announcing availability of reference tools and resource materials developed under sponsorship of the Bureau of Research, USOE, announcing new training programs, and serving as consultants with local and State agencies interested in developing information service centers. During 1968, the Division of Information Technology & Dissemination hopes to place considerable emphasis upon development of linkages that should develop into a national educational information network.

4. Inclusion of journal literature in the ERIC system. In 1967 a contract was awarded to the Herner Company to undertake a study of periodicals and serial literature relevant to education and to recommend arrangements under which journal literature could most easily be incorporated into the ERIC system. Results from the study are not yet available. Still, Central ERIC hopes to be able to receive sufficient information for starting indexing (and possibly abstracting) of some journals in late FY 1967 and certainly in early FY 1968. Inclusion of at least some journal literature will be the principle new program element for ERIC over the next several years.

5. Broadened input of report literature. Central ERIC will continue to pursue systematic acquisition of all reports relevant to education generated within or submitted to Federal agencies, State educational agencies, professional organizations, foundations, and other large-scale producers of documents. Clearinghouse directors are free to pursue independent acquisition of documents, but where a single organization receives continuous requests from a number of clearinghouses, acquisition through Central ERIC will be considered. Also, whenever directors recommend acquisition from a particular organization through Central ERIC, OE staff will follow up to arrange for acquisitions of all relevant documents from that organization.

6. Development of remote retrieval capacity for the ERIC system. Part of the continuation contract for the ERIC facility (the contract now held by NAR) will include specifications for development of a remote retrieval capacity for the ERIC system. When operational, possibly in early 1970, users will be able to query the ERIC files and receive print out through their local terminal of information about documents in the file.

7. Continued refinement in coordination, evaluation, and planning for the ERIC program management reporting requirements will be reviewed constantly and new ways will be explored to achieve maximum benefits from the ERIC system at lowest possible costs. The intensive review sessions conducted in the Fall 1967 with the first 13 clearinghouses proved very useful. These will be continued. Experience has shown that technical meetings are less necessary now that the system has jelled. These will be reduced or eliminated completely. Because the number of clearinghouses has grown, meetings of directors have become more formal. Therefore, other means have to be found to permit intensive discussion of issues. This past year the ERIC Directors Policy Group was established. In its several meetings to date, this group has helped to identify problems more clearly, order items for the agenda for the meetings of all directors, and advise Central ERIC on issues. Because of its success, the Policy Group will be organized on a formal basis and made part of the planning and coordinating mechanisms of the ERIC system.

Conclusion

ERIC is only an infant, yet its contributions to education are already clearly evident. These, however, are only harbingers of the benefits ERIC will provide in the next several years. As State and local educational agencies, college and university researchers and professors and other groups begin to develop efficient information use habits and demand systematic services, each person associated with ERIC will see even more clearly how his efforts have contributed to educational advancement in the United States.

ERIC Clearinghouses

ERIC Clearinghouse on Adult Education
Syracuse University
Syracuse, New York 13210

ERIC Clearinghouse on Counseling and Personnel Services
611 Church Street, 3d Floor
Ann Arbor, Michigan 48105

ERIC Clearinghouse on Early Childhood Education
University of Illinois
Urbana, Illinois 61801

ERIC Clearinghouse on Educational Administration
Hendriks Hall
University of Oregon
Eugene, Oregon 97403

ERIC Clearinghouse on Educational Facilities
University of Wisconsin
Madison, Wisconsin 53703

ERIC Clearinghouse on Educational Media & Technology
Stanford University
Palo Alto, California 94305

ERIC Clearinghouse for Exceptional Children
National Education Association
Washington, D.C. 20036

ERIC Clearinghouse on the Teaching of Foreign Languages
Modern Language Association of America
New York, New York 10011

ERIC Clearinghouse on Vocational and Technical Education
Ohio State University
Columbus, Ohio 43212

ERIC Clearinghouse on Junior College Information
University of California
Los Angeles, California 90024

ERIC Clearinghouse on Higher Education
George Washington University
Washington, D.C. 20006

ERIC Clearinghouse on Library and Information Sciences
University of Minnesota
Minneapolis, Minnesota 55404

ERIC Clearinghouse for Linguistics
Center for Applied Linguistics
Washington, D.C. 20036

ERIC Clearinghouse on Reading
Indiana University
Bloomington, Indiana 47401

ERIC Clearinghouse on Rural Education and Small Schools
University Park Branch
New Mexico State University
Las Cruces, New Mexico 88001

ERIC Clearinghouse on Science Education
Ohio State University
Columbus, Ohio 43221

ERIC Clearinghouse on the Teaching of English
National Council of Teachers of English
Champaign, Illinois 61820

ERIC Clearinghouse on the Urban Disadvantaged
Teachers College, Columbia University
New York, New York 10027

ERIC Clearinghouse on Teacher Education
1201 16th Street, NW.
Washington, D.C. 20036

APPENDIX B

Special ERIC Collections and Resources

ERIC

Following are the titles and prices of/indexes from the Government Printing Office and costs for the related microfiche collection from EDRS. for special collections produced by ERIC.

1. The ERIC Collection on the Disadvantaged: 1740 documents; microfiche for $230; with two indexes: Catalog of Selected Documents on the Disadvantaged, A Number and Author Index (OE 37001) (65 cents), and a Subject Index (OE 37002) ($3.00).

2. Office of Education Research Reports 1956-1965: 1214 research reports on projects supported by USOE in the period 1956-65; microfiche for $280; the resume volume (OE 12029) ($1.75) and the index volume (OE 12028) ($2).

3. Pacesetters in Innovation: Fiscal Year 1966: 1075 Projects to Advance Creativity in Education (PACE) approved for support by USOE in fiscal year 1966: microfiche $100; resume and index volume (OE 20103) ($2.50).

4. Pacesetters in Innovation: Fiscal Year 1967: 907 projects to Advance Creativity in Education (PACE) approved for support by USOE in fiscal year 1967: microfiche $120; resume and index volume (OE 20103-67) ($2.50).

5. Number and Subject Index of Selected Documents of Higher Education: 845 reports; microfiche $115; index available through the ERIC Document Reproduction Service as ED 012110: $ .50 on microfiche; $3.24 on hard copy; not available from the Government Printing Office.

6. Manpower Research, Inventory for Fiscal Years 1966 and 1967: 393 reports from projects funded by OEO and the Departments of Labor, HUD, and HEW; microfiche $60; the resume and index volume (OE 12031) (in press).

From time to time, other special collections may be developed. When they are, information about them will be provided in a special notice in Research in Education.

Several tools for helping persons use the ERIC system are available, including:

1. A brochure: ERIC Can Help--copies are available free.

2. The Thesaurus of ERIC Descriptors (First Edition), December, 1967 (OE-12031) contains about 3,100 descriptors and is used to select terms for searching the subject indexes of all ERIC bulletins: $2.50

3. The Thesaurus of ERIC Descriptors (First Edition) Supplement No. 1, March, 1968 (OE-12031-1) adds approximately 400 new descriptors, with a rotated display of all ERIC descriptors. ($2.00).

4. Research in Education Annual Index--1967 Projects, combines the indexes to projects cited in the first 14 issues of Research in Education: $1.50.

5. Research in Education: Semi-Annual Index--Reports, Jan.-June, 1968. (In press).

6. How to Use ERIC, a self instructional manual on how to use ERIC written from the viewpoint of a nontechnical person. OE 12037 12 Pp. $.20.